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EFFICIENT OPERATION OF LOCAL ELEVATORS

Costs and Incomes of Farmers' Elevators in Minnesota for 1925-1926

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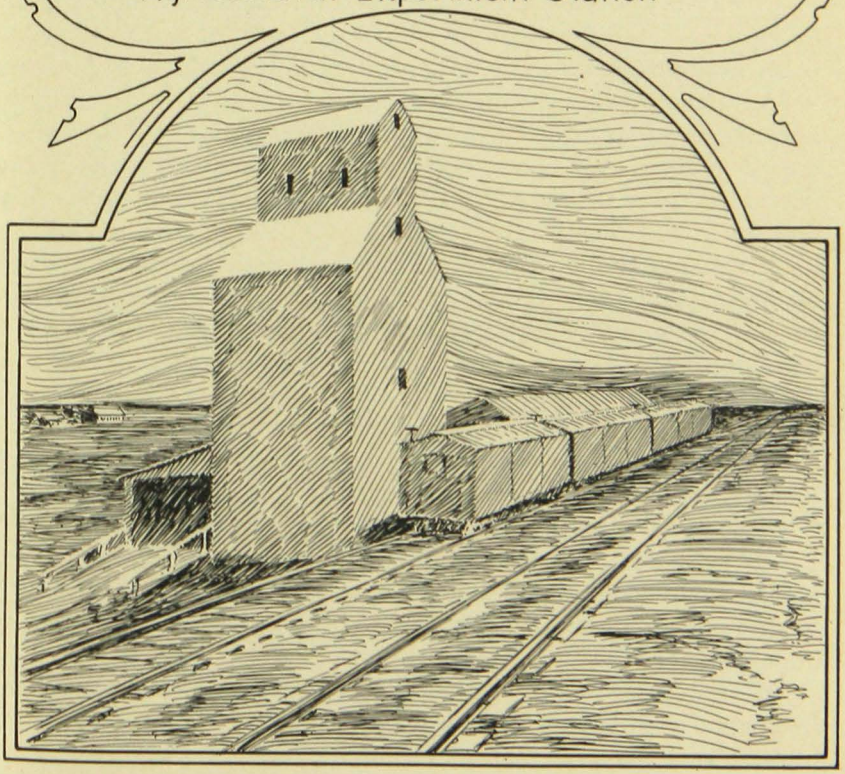

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SUMMARY

Cost of operation and income are selected as the most practical measures of the efficiency of farmers' co-operative elevators. The purpose in discussing these measures is primarily to point out why costs and incomes vary, how costs may be reduced, and how incomes may be stabilized.

Costs incurred by 50 farmers' elevators in Minnesota in 1925-26, range from less than 2 cents to 13 cents per bushel.

Elevators in corn and oats sections have lower costs because (1) they market a larger volume of grain, (2) they can utilize their plant and labor better by virtue of the large volume of corn, which is marketed chiefly after the peak movement of other grains has passed, and (3) they market grains of lower price.

Costs vary within groups of elevators handling similar grains because of (1) differences in volume of business, and (2) differences in adjustments of the organization to the volume of business.

An elevator obtains minimum costs per bushel more easily by keeping watch of all its expenditures and stopping any leak which creeps in than by being extraordinarily economical in the use of one factor, such as management, and neglecting other items which may seem less important.

Increasing the volume of grain purchases is best accomplished by first making the business more efficient; that is, by reducing costs, developing sales methods, or improving the technic of handling grain. Higher prices can then be paid without fear of loss.

Side lines may make elevator operation more efficient if they do not increase the cost of marketing grain and if they contribute enough income to more than pay the additional costs incurred in handling them, or if better service is thereby rendered to farmers.

When adjusting cost elements to volume of business, it is good policy to examine first the labor expense, as this is the most variable item. Then inquire into each of the other expenses in turn to discover, if possible, whether cost can not be reduced without impairing services rendered.

The gross trading income of the 50 Minnesota elevators ranged from almost nothing to over 13 cents per bushel in 1925-26. Grain trading was the principal source of income and furnished about 60 per cent of the total income. Side-line and other miscellaneous income was very important, however, and for 12 elevators out of the 50 made a profit of what would otherwise have been a loss.

TESTS OF EFFICIENT OPERATION

Price paid for grain is the principal test of efficiency of a farmers' co-operative elevator. The "price paid" should here include both the purchase price and any patronage dividends distributed after expenses and reserves that protect the capital investment are provided for. The quality of grain is difficult to determine, however, both because the quality varies within a grade and because there is much overgrading, hence it is not possible to measure the efficiency of an elevator accurately in this manner.

Cost of operation and **income** are selected as the measures of efficiency in this study: cost, because it is an important factor affecting what an elevator can pay and because data are more easily available than for most other factors; income, because it indicates the degree to which expenses are provided for and capital investment is protected.

Net profit is a good index of efficiency of nonco-operative elevators. It is a poor test for co-operative companies, especially when the profits are not distributed as patronage dividends. Grain producers are also interested in the **services** given by a local elevator. Some prefer more service, as additional side lines, feed grinding, and more continuous markets. Others are more concerned with the supplying of better seeds, better distribution of returns between grains and among patrons, and the like. Service given is an important test of efficiency, and altho it can not be measured accurately, it must be given consideration in any discussion of cost or income.

Our purpose is primarily to point out why costs and incomes vary, how costs may be reduced, and how incomes may be stabilized.

OPERATING CONDITIONS VARY

Local elevators operate under widely varying conditions of volume of business, variety of products, and competition, that affect costs and incomes but that are only slightly, if at all, within the control of the management. Obviously such factors should be eliminated as completely as possible when comparing the costs and incomes of different elevators.

For this reason, the elevators of Minnesota have been divided into four geographical groups (see Fig. 1) that will be designated as the southwestern, northwestern, central, and southeastern districts. The outstanding feature of the elevators in southwestern Minnesota is the large quantity of corn and oats that they market at low cost and on small income. The northwestern district comprises the portion of the Red River Valley in Minnesota and includes elevators that market

chiefly wheat and oats, and that sell only small amounts of side lines. The elevators in the central district market chiefly small grains, altho some corn is also marketed as commercial corn production is extended northward. Side lines constitute a relatively larger part of the business than in the southwestern or northwestern part of the state. The chief characteristics of the elevators in the southeastern section are a diversity of small grains and corn, and a large volume of side lines. The volume of business also varies between these sections (see Fig. 1) because of differences in type of agriculture.

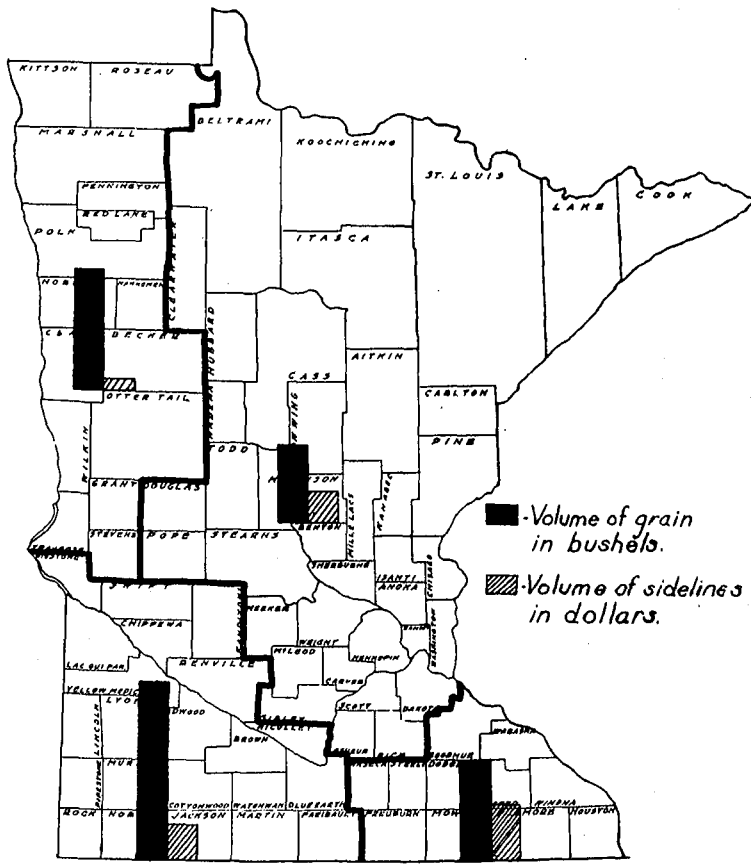

Fig. 1. Districts in Which Operating Problems of Farmers Elevators Are Similar These data represent average volume of grain and side lines handled for 1925-26.

COSTS OF OPERATION IN 1925-26

Farmers' elevators incurred costs ranging from less than 2 cents to 13 cents per bushel in Minnesota in 1925-26. This includes 50 elevators whose business has been audited by a public accountant or whose records provided figures comparable to auditor's reports. The costs varied considerably between the different sections. The cost of the 24 elevators in the corn and oats section of southwestern Minnesota ranged from less than 2 cents to 7 cents per bushel, while the 26 elevators in the other sections, which are put together because of the small number of elevators in the central and southeastern sections, had an expense varying from less than 3 cents to 13 cents per bushel. Eighty per cent of the elevators in the southwestern district operated at less than 4 cents, while only 40 per cent of the elevators in the rest of the state operated below this figure. Figure 4 shows that 84 per cent of farmers' elevators had costs of less than 6 cents and that the most common costs were from 2 to 4 cents.

Costs in this bulletin include out-of-product operating expenses and depreciation; also such items as building, equipment, extra labor, manager's salary, insurance, and interest on borrowed capital. They do not include interest on the stockholders' equity in the business, because the auditors did not evaluate the properties on the same basis.

WHY COSTS VARY

Elevators in the sections that produce corn and oats chiefly as a cash crop, have lower costs than the others because (1) they market a larger volume of grain, (2) they can utilize their plant and labor better by virtue of the large volume of corn which is marketed chiefly after the peak movement of the other grains has passed, and (3) they market grains of lower price. These are obviously advantages which the managers of other elevators can not expect to realize as long as present systems of farming prevail.

On the other hand, the elevators within these two groups have widely varying costs (Figs. 2 and 3) that are largely within the control of the manager. The principal reasons for these variations are differences (1) in volume of business and (2) in the adjustment of the organization (plant, equipment, labor, etc.) to the volume of business.

The relation of volume to costs is shown in Figure 5. It will be noted that, in general, large volumes are accompanied by low costs, and vice versa. That is, as the distance on the vertical scale of the figure increases, the horizontal distance (reading to the right) to the data (representing individual elevators) decreases. This is a common relationship among marketing concerns having a relatively large

fixed investment. An elevator is built and equipped and the labor and manager are employed to handle a given quantity of grain. Until that quantity is marketed, these cost elements are not fully utilized and costs per bushel are higher.

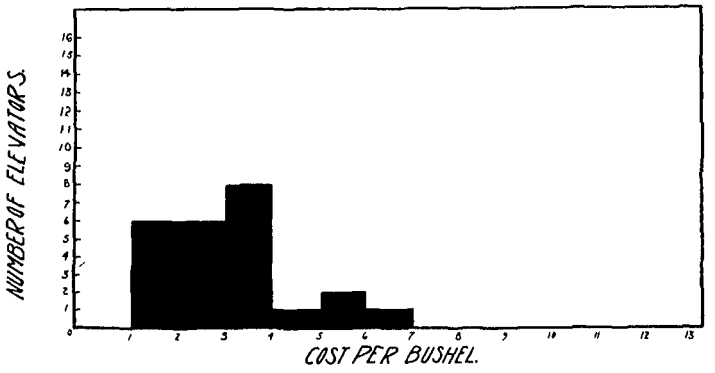

Fig. 2. No. of Elevators Operating at Different Costs per Bushel in Southwestern Minnesota

Eighty per cent of the elevators in this district had costs ranging from one to four cents.

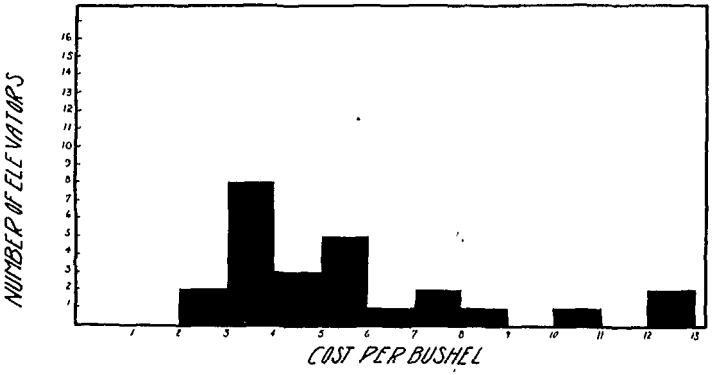

Fig. 3. No. of Elevators Operating at Different Costs per Bushel in Northwestern, Central, and Southeastern Minnesota

Most of the elevators in these sections have costs of from three to six cents.

The decrease in cost with an increase in volume, as between elevators, is distinctly noticeable under 200,000 bushels in the southwestern district, and it is rather rapid under 150,000 bushels in other parts of the state. This means that as elevators are now set up, representative or typical elevators ought to handle at least these amounts of grain in their respective districts in order to operate economically. Even lower costs may be secured with larger volume, as costs seem to be still decreasing with the largest volumes (Fig. 5).

Volume of business does not alone account for the wide variation in costs between elevators, however. Costs also vary between elevators marketing similar volumes. In 1925-26, the elevators in southwestern Minnesota handling between 200,000 and 300,000 bushels had costs ranging from approximately 3 cents to 5 cents per bushel, while elevators in other sections of the state handling similar volumes had costs of approximately 2½ cents to 4¾ cents per bushel.

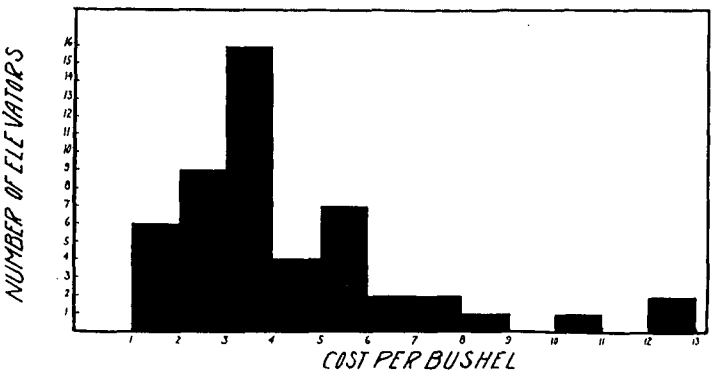

Fig. 4. No. of Elevators Operating at Different Costs per Bushel in All Districts
One-third of the elevators had total costs of from three to four cents.

These data indicate that elevator associations are not equally successful in adjusting building, equipment, labor and management, and other cost factors to the volume of business. Some of the variations are due to failure or partial failure of crops and to changes in agriculture that were not foreseen when the elevator was built, but these probably account for only a small part of the differences. The chief reason is that the persons responsible for the business are not equally successful either in planning the buildings, selecting equipment, employing the right amount of extra labor and the like, or in getting these cost factors of similar grade and quality at the lowest possible price.

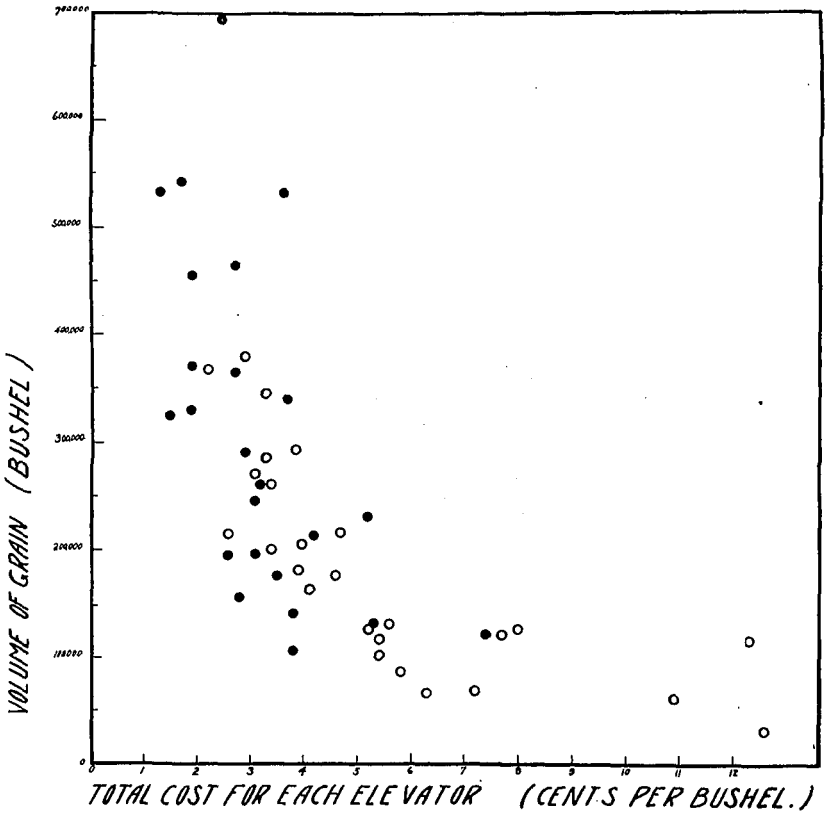

Fig. 5. Relation Between Cost and Volume

(Solid circles represent elevators in the southwestern district and open circles represent elevators in the other districts).

Costs decrease very rapidly as volume increases up to 200,000 bushels in southwestern Minnesota and up to 150,000 bushels in the rest of the state.

OPERATING EXPENSES OF FARMERS' ELEVATORS IN 1925-26

Operating expenses of 50 farmers' elevators are given in Table I. The items of expense are those most commonly found in annual reports—building, management, general office, extra labor, power, light and heat, taxes, insurance, interest, and miscellaneous. Management is by far the largest single item. It consists chiefly of manager's salary, altho such small expenses as directors' fees and traveling costs are included in the item. Building and equipment, general office, extra labor, and interest are other important expenses. All expenses, including total expense but excepting miscellaneous expense, are lower in southwestern Minnesota than in other sections of the state. Building and

equipment and interest are relatively lower in southwestern Minnesota than in other districts. This is because corn is marketed on a large scale, thus making better use of the plant, and because less capital is tied up in the lower priced grain.

TABLE I. Average Operating Expenses in 1925-26

Item of expense	All elevators	Southwestern district	Northwestern, central, and southeastern districts
	Cents per bu.	Cents per bu.	Cents per bu.
Building and equipment	0.5	0.3	0.7
Management	1.4	1.0	1.7
General office	0.5	0.4	0.6
Extra labor	0.5	0.4	0.7
Power, light and heat	0.2	0.2	0.3
Taxes	0.3	0.2	0.3
Insurance	0.3	0.2	0.4
Interest	0.4	0.2	0.6
Miscellaneous	0.2	0.2	0.2
Total	4.3	3.1	5.5

OPERATING LOW-COST ELEVATORS

The manager and directors of every elevator are interested in keeping costs at the lowest figure that is consistent with good service, hence operating costs of the 10 lowest-cost elevators are given in Table II, together with some of the reasons for the low cost. It should be noted that all items of expense in both the southwestern district and the other districts, are lower than the average of all elevators in the two groups. Moreover, the total expense of elevators in the southwestern district was only 1.7 cents in contrast to 4.3 cents for all elevators in this district, and only 2.9 cents in the other districts as compared to 5.5 cents for all elevators in the group.

TABLE II. Operating Costs of Low-Cost Elevators in 1925-26

Item of expense	5 elevators in southwestern district	5 elevators in northwestern, central, and southeastern districts
	Cents per bu.	Cents per bu.
Building and equipment	0.2	0.4
Management	.7	.8
General office	.1	.3
Extra labor	.3	.4
Power, light and heat	.1	.3
Taxes	.1	.2
Insurance	.1	.2
Interest	.0	.2
Miscellaneous	0.1	0.1
Total	1.7	2.9

One of the principal reasons for the efficiency of these elevators is the high degree of utilization of cost elements. The volume of grain marketed was relatively large, averaging 467,502 bushels for the southwestern district and 304,337 bushels for the other districts. This was in contrast to 314,443 bushels and 227,043 bushels for all elevators in each group. It should be noted, however, that the range in volume within each group is large. Volume varied from 371,202 to 546,704 bushels in southwestern Minnesota and from 216,371 to 377,425 bushels in other sections of the state.

In the group selected from the southwestern district, the elevator having the lowest total cost per bushel secured this low cost by having a relatively large volume of business and employing a low-salaried manager. Building and equipment costs; power, light, and heat; insurance, and miscellaneous expense for this elevator were approximately the same as the average for the group. Management cost was very much lower, however, 0.5 cents per bushel as compared with an average of 0.7 cents per bushel for the group of five. The combined labor and management costs for this elevator were about 85 per cent of the average for the group. General office expense and taxes were slightly lower than the average, while there was no interest expense.

In the group selected from the rest of the state, the elevator having the smallest volume of business had a lower total cost per bushel than that having the largest volume. In this case the management cost was more than twice that of the larger elevators, and about 40 per cent higher than the average for the group. Extra labor was slightly lower, but the combined labor and management cost was above the average. In spite of this fact, however, the small-volume elevator kept its total cost per bushel below the average by keeping interest down to less than one-sixth that of the larger house, and building and equipment costs at about two-thirds the average. Taxes for this low-cost elevator were very low, while other costs were about average.

The conclusion drawn from an analysis of the business of the low-cost elevators is that an elevator obtains minimum costs per bushel more easily by keeping watch of all its expenditures and stopping any leak which creeps in than by being extraordinarily economical in the use of one factor, such as management, and neglecting other items which may seem less important.

REDUCING COSTS BY INCREASING VOLUME

The costs of operating a business like a local elevator decrease per unit of volume as its business increases, because a site, an elevator with its equipment, and a manager are provided to handle the business. Costs per bushel decrease until these elements are economically utilized. Beyond this point, additional building, equipment, site, or management are necessitated by larger volume, and costs per bushel are likely to rise. However, the typical Minnesota farmers' elevator can probably market a considerably larger volume than it is now receiving without appreciably increasing the per bushel expense of any of these items. A more serious problem is to get the business.

There are two methods of increasing volume, either buying more grain or developing side-line enterprises. The two methods will be discussed separately because they involve different considerations.

Increasing the grain business is best accomplished by first making the business more efficient; that is, reducing costs, developing sales methods, or improving the method of handling grain. Higher prices can then be paid without fear of loss.

Another method is to calculate what price the elevator can afford to pay for a larger share of the business and then to bid no more than is necessary to get it. This involves more risk because of the possibility of not getting the business at the higher price offered and because the effect of volume on cost may be miscalculated.

The effect of changes in volume on the costs of any elevator depends upon the conditions under which the elevator is operating. Increased volume will reduce costs relatively less when the plant is operating near capacity than when only partly utilized, because costs tend to decrease with increased volume but at a declining rate. Moreover, the point of most economical utilization of the elevator will be reached more quickly when the plant, equipment, management, and other cost factors are not well adjusted in size (or capacity) to each other than when the combination of these factors is well planned. A building with one "leg," for example, can not be used as completely as one with two "legs" which permit receiving and shipping grain simultaneously. It is therefore impossible to show the effect of changes in volume on costs for each elevator in this study. Each manager must make this analysis for himself.

Building and equipment costs decrease very rapidly with expanding business, at least up to the point where additional building and equipment must be provided. Depreciation and maintenance may be increased somewhat but they only constitute about one-third of the combined building, equipment, and site cost. Management cost likewise decreases rapidly until a volume of 150,000 to 200,000 bushels is

handled or until the time of the manager is fully used, and the cost continues to decline even after extra labor is required, but at a slower rate. A peculiarity of this cost is the tendency for the manager's salary to increase as business grows and to offset to some extent the lower wages paid for helpers.

Electricity and gasoline costs tend to decrease slightly with larger volume because there is less starting and stopping of motors and engines. Insurance and interest costs on grain likewise tend to decrease because the stocks of grain on hand form a smaller proportion of the total business when volume is large. This is especially true if insurance costs are based on stocks of grain as reported weekly to the insurance agent. If a large proportion of grain is stored by farmers, the interest paid on balances left with commission merchants from the sale of stored grain may offset wholly or in part the charge for capital invested in grain. Taxes on grains are the same for all grains because they are levied on a bushel basis. Miscellaneous expenses, like many other items, also tend to decrease with large volume, altho the rate of decline is less rapid than for many expenses. The net effect of increased volume is therefore to cause total per bushel costs of most elevators to decrease rather rapidly within comparatively wide limits of increased volume under usual operation in Minnesota. Management, building, and equipment costs decrease most rapidly.

SIDE LINES INCREASE EFFICIENCY OF ELEVATOR OPERATION

Increasing volume by developing side lines, unlike increasing the quantity of grain, has no important effect upon the per bushel cost of marketing grain. This is because side lines, especially when handled in small quantities, usually permit better utilization of plant and labor and incur little additional expense. When the side-line business expands to the point where additional plant and labor are necessary, costs of marketing grain rise unless the additional expense is borne by the side-line business, as should be the case.

The side-line business is therefore not so much a problem of cost as a problem of income, for most Minnesota elevators, because side lines constitute a very small proportion of the total business and because approximately the same size of plant and particularly the same amount of labor are provided as if no side lines were handled. Whether the handling of side lines is a proper function of a local elevator depends chiefly upon the ability of the manager to buy, handle, and sell merchandise. Experience shows that fuel, flour, feed, twine, and seeds are well adapted to the elevator business. More complete lines do not

give as satisfactory results, partly because they require special skill in marketing, partly because they increase the risk of loss to the grain business, and partly because they either increase the cost of marketing grain or create the difficult problem of dividing the costs between the side line and the grain departments of the business.

The service aspect of side lines should also not be overlooked. Better seeds, feeds, and the like may be furnished in this way, in which case the handling of side lines may be worth while even if they no more than pay the expense incurred.

Side lines make elevator operation more efficient if they do not increase the cost of marketing grain and if they contribute enough income to more than pay the additional costs incurred in handling them, or if better service is thereby rendered to farmers and the side lines at least pay their own expenses.

ADJUSTING COST ELEMENTS TO ELEVATOR ENTERPRISE

Additional grain can not always be had, at least in such quantities as to have an important effect on costs. Side lines frequently can not be conveniently developed to increase income. Hence the importance of better adjusting cost factors to the volume of business.

In some respects a reorganization of the set-up of an elevator business can only be part of a long-time program, altho the possibilities of readjustment are frequently underestimated. Few changes of an important nature can be made in buildings and equipment, for example, until they are obsolete or worn out. Maintenance may be neglected in order that they may be replaced more quickly, but such a policy is only rarely advisable. Fortunately, buildings seem to be better adjusted to volume than any other important cost element, probably because most of the elevators have been built by large companies that specialize in elevator construction. Equipment, on the other hand, is more poorly planned. Some elevators are underequipped while others have too much capital invested in this part of the business. However, about all the management can do if it has too much or too expensive equipment is to use discretion in selecting replacements when the machinery is worn out.

The chief opportunity to reduce costs is in the administration of labor and management, which alone accounts for more than 50 per cent of the variations in costs between elevators having similar volume. More careful consideration of the amount of extra labor employed, as in years of low production or in seasons of small receipts, is the best method of reducing this expense. Occasionally, too high wages are

paid, altho this seems not to be the case very often. Wages for such labor are largely determined by wages paid for other unskilled labor in the community. Information upon which to base wages of extra labor is therefore not difficult to obtain, but it is very easy to allow the manager a full-time helper even tho the crop is a failure or to check up on his needs for assistance during the slack periods. This point is repeatedly illustrated by elevators handling similar volumes of grain and side lines, some of which employ full-time assistance and others provide the manager practically none. Under such circumstances there is obviously much need for careful consideration of the extra labor problem.

More attention may also be profitably given to manager's salary, as salaries are frequently poorly adjusted to managerial ability. This is an important problem for those charged with the responsibility of a farmers' elevator, partly because it has a bearing on the economy of operation and partly because an adequate reward for efficient management is as important for co-operatives as for other types of marketing enterprises.

Interest, insurance, and miscellaneous expense also can frequently be changed on short notice. Taxes can not be reduced, because the basis of assessment and the tax rate are not within the control of management. Interest charges may be reduced by reducing the amount of borrowed capital or by changing to a loan bearing lower interest. The first method, it should be pointed out, only changes the form of the charge from interest paid for borrowed capital to interest (or dividends) paid on capital contributed by owners of the elevator. It should also be noted in this connection that there are serious limitations on thus reducing interest charges unless arrangements can be made to lend at reasonable rates surpluses of capital that the elevator company is likely to have at certain seasons of the year. Care must also be exercised in changing loans of a higher rate to loans of a lower rate, as from the local bank to a commission firm, to compare the terms of the loan in order to make certain that the economy of the lower rate is not offset by disadvantageous terms.

Insurance costs may be lowered in some instances by avoiding over-insurance; in others, by selecting insurance companies. Some elevator companies insure property for less than its insurable value but this is false economy. Miscellaneous expense is the most difficult of all expenses to control because it includes so many small items. Only by eternal vigilance can this expense be kept at a minimum consistent with efficient office management.

Two things must be said about reducing these various expenses. One is that some costs may be raised if others are lowered. More

extra labor may be required if less equipment is used. The other is that costs may be reduced by lowering the quality of service. Salaries may be reduced at the expense of successful operation, or economy in office management may result in poorly kept records and accounts. Certainly economy carried to such extremes is unwise. How far a manager and board of directors can introduce such economies depends upon conditions under which the business is operated and the quality of service demanded by patrons.

It is therefore good policy first to examine the labor expense, as this is the most variable item. Then inquire into each of the other expenses in turn, to discover, if possible, whether costs can not be reduced without impairing the service rendered.

INCOME OF FARMERS' ELEVATORS IN 1925-26

The gross trading income of the 50 elevators included in this study ranged from almost nothing to over 13 cents per bushel in 1925-26. Ninety per cent realized incomes ranging from 2 cents to 10 cents; and 38 per cent earned incomes of from 2 to 4 cents. Incomes were smaller (Table III) among elevators in southwestern Minnesota than in other sections of the state. This difference is not accidental. It exists from year to year and is chiefly due to the lower cost of operating elevators that market large quantities of corn and oats. Sixty per cent of the elevators in the commercial corn and oats sections had incomes of 2 to 4 cents per bushel, while a corresponding proportion in other sections realized from 4 to 8 cents.

TABLE III. Range and Distribution of Gross Trading Income in 1925-26

Cents per bushel	No. of elevators		
	All elevators	Southwestern district	Northwestern, central, and southeastern districts
Less than 0	1	1	0
0 to 2	1	0	1
2 to 4	18	15	3
4 to 6	11	4	7
6 to 8	10	3	7
8 to 10	6	0	6
10 to 12	2	1	1
12 to 14	1	0	1
Total	50	24	26

Gross trading income here includes elevator income from all sources before expenses of operation are deducted. Incomes from side lines and miscellaneous sources are included with the trading profit on grain. The total income is then expressed as income per bushel because the elevator business is primarily a grain marketing enterprise.

Grain trading furnished about 60 per cent of the total income. Table IV shows that 3.2 cents out of a total gross trading profit of 5.5 cents per bushel was obtained from this source in 1925-26. Different incomes are secured from different grains. In general we may say that the income from a grain chiefly depends on the cost of handling it, altho the volume in which a grain is handled is a factor. Those marketed in small quantity produce an uncertain income chiefly because of the difficulties of adjusting local grades to terminal standards.

The profits of side-line trading and other miscellaneous income therefore represent a very important part of total elevator income. The chief significance of it to profitable elevator operation can be more fully realized, however, when it is understood that a large part of the farmers' elevators in Minnesota would have been unable to pay operating expenses with the grain trading profits. Suitable side-line enterprises often turn what would otherwise be a deficit into a profit. This was true of 12 elevators out of the 50 included in this study.

TABLE IV. Sources of Income in 1925-26

Item of income	All elevators		Southwestern district		Northwestern, central, and southeastern districts	
Grain trading profit	..	3.2	..	2.7	..	3.7
Wheat	2.6		0.2		4.8	
Flax	3.6		5.0		2.3	
Rye	0.6		-.3*		1.4	
Oats	2.2		2.3		2.1	
Barley	2.5		1.7		3.2	
Corn	2.7		1.8		3.4	
Sideline trading profit	..	1.6	..	1.1	..	2.0
Miscellaneous income	..	0.7	..	0.3	..	1.0
Total		5.5		4.1		6.7

* Loss.

IS ELEVATOR INCOME ADEQUATE?

The adequacy of the operating income varies widely between elevators. Approximately one-fourth of the elevators in 1925-26 did not earn enough to pay out-of-pocket expenses and to provide reserves for depreciation of plant (see Table V). The other three-fourths had a net profit ranging from a fraction of a cent to over 5 cents per bushel that was available to stockholders as surplus, dividends on capital stock, or dividends on patronage. The elevators in the southwestern district again seem to have been slightly more successful than those in other districts in getting into the net operating profit class.

TABLE V. Range and Distribution of Net Operating Income, 1925-26

Cents per bushel	No. of elevators		
	All elevators	Southwestern district	Northwestern, central, and southeastern districts
Gain:			
0 to 1	9	7	2
1 to 2	13	8	5
2 to 3	8	3	5
3 to 4	2	0	2
4 to 5	3	0	3
5 and over	2	1	1
Loss:			
0 to 1	6	2	4
1 to 2	2	1	1
2 to 3	3	1	2
3 and over	2	1	1
Total	50	24	26
Net gain	37	19	18
Net loss	13	5	8

Further analysis of groups of elevators shows that their success in adjusting cost and income varies widely between districts and between years. In 1923-24, elevators in all districts had small net profits (see Fig. 6). In the following year, net profits were large. One of the principal reasons for these variations, as will be seen by comparing Figures 6 and 7, is volume. A large turnover, as in a season of high yields, reduces costs without having a corresponding effect upon gross operating income. The character of the grain and market conditions are also factors causing variations between cost and income.

STABILIZING INCOME

To point out all the possibilities of stabilizing elevator income so that it will provide for operating expenses, replacements, and a reasonable return on stockholders' investments would require a detailed discussion of marketing practices. Only a few suggestions for this important problem can therefore be given here.

First, the management must decide what income is adequate and then adopt measures to realize it. Operating margins must be determined for each grain and then protected by consistent 100-per-cent hedging. This involves keeping a daily "long" and "short" account which managers ordinarily do not have, but which is not an unreasonable requirement. Overgrading and underdocking, so commonly practiced by grain buyers, should also be avoided. Otherwise, the margin decided upon disappears. Scales should be properly regulated lest more grain be paid for than is received. Up-to-date information as to prices of grain of various grades and qualities is now received by all eleva-

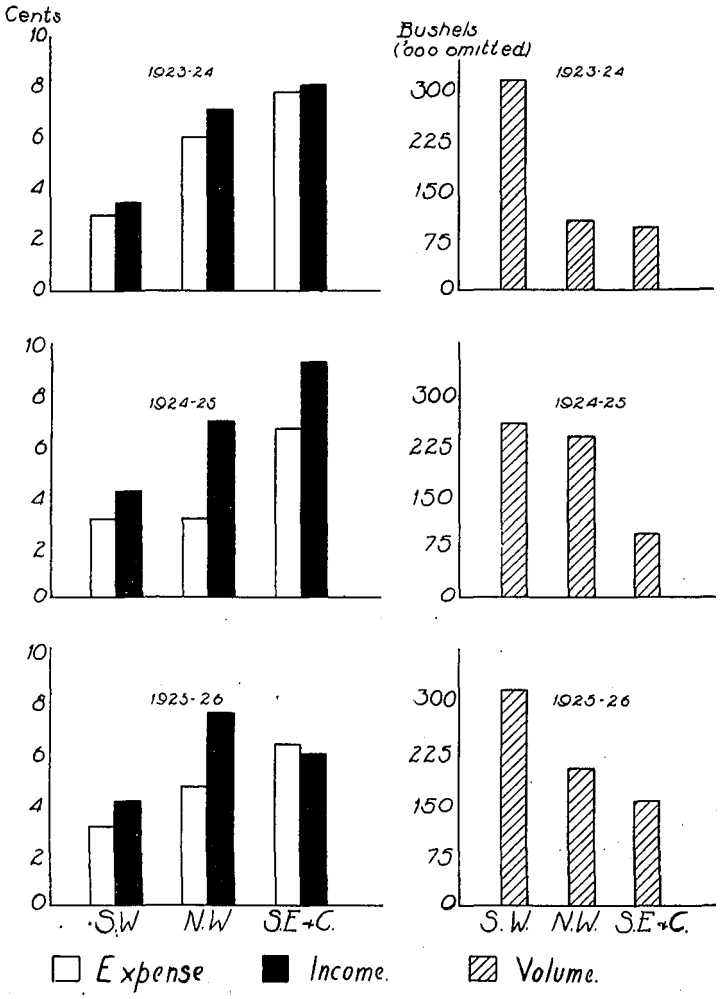

Fig. 6. Average Costs and Incomes of Minnesota Farmers Elevators by Districts for 1923-24, 1924-25, and 1925-26 (Cents per Bushel). Incomes are more uniform from year to year than expenses.

Fig. 7. Average Volume of Grain Marketed by Elevators by Districts for 1923-24, 1924-25, and 1925-26.

tors but in various degrees of completeness. Undoubtedly more complete data, particularly regarding such factors as protein content of wheat, are needed to protect the buying margins of some elevators.

Other methods of insuring adequate income include cleaning, conditioning, and mixing of grain; finding new outlets—local mills and cereal products factories—and developing side lines. Most elevators are now using these sources of income in varying degrees. However, the authors believe that in many cases the management does not fully realize its possibilities.

Finally, marketing charges that are earned by the elevator but that are generally not collected, particularly storage charges, represent an important possible source of income that has not been realized upon because of the difficulty of making collections. This is one of the mutual problems of local elevators, the solution of which they should agree upon. Moreover, such an agreement would not only make an important source of income available and frequently turn an operating loss into a profit, but would stop the present undesirable discrimination between patrons who store grain at the elevator and those who do not.